Claims Pending After Entry of Amendment

1. A method for the identification of human subjects having Alzheimer's disease responsive to treatment with a cholinomimetic drug, said method comprising determining the presence of *apoE4* gene alleles in said subject, wherein the absence of an *apoE4* gene allele in a biological sample of said subject identifies said subject as a subject whose Alzheimer's disease-related cognitive impairment is responsive to treatment with a cholinomimetic drug.

2. The method of claim 1, wherein said method further comprises administering to said subject having an absence of apoE4 allele a therapeutically effective amount of a cholinomimetic drug.

3. The method of claim 2, wherein administration of the cholinomimetic drug improves cognitive performance.

4. A method for genotyping a patient sample with respect to apoE4 allele in a clinical trial of a drug for the treatment of cognitive impairments, said method comprising:

(a) identifying a patient already diagnosed with said cognitive impairments, or as being predisposed to acquire or to be at risk for said cognitive impairments; and

(b) determining the presence of *apoE4* gene alleles in said patient, wherein the genotype of said patient sample with respect to apoE4 allele in a clinical trial of said drug allows the effects of said drug to be compared according to apoE4 genotype.

5. A method for genotyping a patient sample with respect to apoE4 allele in a clinical trial of a drug for the treatment of Alzheimer's disease, said method comprising:

(a) identifying a patient already diagnosed with said Alzheimer's disease or as being predisposed to acquire or to be at risk for said disease; and

(b) determining the presence of *apoE4* gene alleles in said patient, wherein the genotype of said patient sample with respect to apoE4 allele in said clinical trial of a drug for

the treatment of said Alzheimer's disease allows the effects of said drug to be compared according to apoE4 genotype.

8. The method of claims 1, 2, 3, 4, or 5, wherein said drug is tacrine.